



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 09/982,177 | 10/19/2001 | Yuichi Ikeda | 862.C2413 | 7799 |
| 5514 | 7590 | 12/08/2004 | EXAMINER | |
| FITZPATRICK CELLA HARPER & SCINTO 30 ROCKEFELLER PLAZA NEW YORK, NY 10112 | | | KRONENTHAL, CRAIG W | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2623 | |

DATE MAILED: 12/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|---------------------------------------|-------------------------------------|--|
| Office Action Summary | Application No. 09/982,177 | Applicant(s) IKEDA ET AL. | |
| | Examiner Craig W Kronenthal | Art Unit 2623 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-66 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-11, 13-21, 24-33, 35-40, 42-45 and 47-66 is/are rejected.
- 7) ☒ Claim(s) 1-15, 22, 23, 29-31, 34, 36, 41 and 46 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>10/19/01</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Objections

1. Claims 1 and 2 are objected to because of the following informalities:

- Line 16 of claim 1 reads "transmitted addition level". Because there are two addition levels mentioned earlier in the claim, the words should be replaced with "transmitted appropriate addition level". Claim 2 depends on claim 1.

Appropriate correction is required.

2. Claims 3-11 are objected to because of the following informalities:

- In claim 3, on page 36 lines 20-21, "setting the determined addition level to said image processing apparatus" should be replaced with "setting the image processing apparatus to use the determined addition level". This interpretation was made since it does not make sense for the addition level to be an apparatus. This would be inconsistent with the specification and dependent claims, which imply the addition level to be a type of magnitude and not an object. Claims 4-11 depend on claim 3.

Appropriate correction is required.

3. Claims 13-15 are objected to because of the following informalities:

- In claim 13, on page 40 lines 13-15, "setting the selected addition level to said image processing apparatus" should be replaced with "setting the image processing apparatus to use the selected addition level". This interpretation was

Art Unit: 2623

made since it does not make sense for the addition level to be an apparatus.

This would be inconsistent with the specification and dependent claims, which imply the addition level to be a type of magnitude and not an object. Claims 14 and 15 depend on claim 13.

Appropriate correction is required.

4. Claims 29 and 30 are objected to because of the following informalities:

- In claim 29, on page 45 lines 18-19, "setting the addition level, determined at said determination step, to the image processing apparatus" should be replaced with "setting the image processing apparatus to use the addition level determined at said determination step". This interpretation was made since it does not make sense for the addition level to be an apparatus. This would be inconsistent with the specification and dependent claims, which imply the addition level to be a type of magnitude and not an object. Claim 30 depends on claim 29.

Appropriate correction is required.

5. Claim 31 is objected to because of the following informalities:

- In claim 31, on page 46 lines 19-20, "setting the second addition level to the image processing apparatus" should be replaced with "setting the image processing apparatus to use the second addition level". This interpretation was made since it does not make sense for the addition level to be an apparatus.

Art Unit: 2623

This would be inconsistent with the specification and dependent claims, which imply the addition level to be a type of magnitude and not an object.

Appropriate correction is required.

6. Claim 36 is objected to because of the following informalities:

- In claim 36, on page 48 lines 16-17, "setting the second addition level to the image processing apparatus" should be replaced with "setting the image processing apparatus to use the second addition level". This interpretation was made since it does not make sense for the addition level to be an apparatus. This would be inconsistent with the specification and dependent claims, which imply the addition level to be a type of magnitude and not an object.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-3, 8-11, 13-18, 24-30, 32, 33, 35-37, 50, 51, 54-56, 59, and 61-66 are rejected under 35 U.S.C. 102(b) as being anticipated by Cox et al. (PN 6,154,571).
(hereinafter Cox)

Regarding Claim 1: Cox discloses a data processing system including an image processing apparatus (adders, Fig. 3, 52 and 64) for processing an image and a maintenance apparatus (watermark correction device, Fig. 3, 62) for setting a processing function of said image processing apparatus (52), said maintenance apparatus (62) connected with said image processing apparatus through a network (all arrows in Fig. 3), wherein

- Said maintenance apparatus (62) receives an addition level of anti-forgery information (Fig. 3, output of 60), formed on a print medium by said image processing apparatus (52), and transmits an appropriate anti-forgery information addition level (Fig. 3, output of 62) to the image processing apparatus (64) based on the received addition level (output of 60). The image processing apparatus, which is represented by the adder (52) initially adds a watermark to DCT coefficients, which are derived from a print medium such as an input image (col. 9 lines 52-54). The watermark correction device (62) acts as the maintenance apparatus to calculate a more appropriate addition level and outputs this level back to another adder (64) belonging to the image processing apparatus (col. 10 lines 55-58).
- Said image processing apparatus (52, 64) adds anti-forgery information (watermark correction signals, Fig. 3, output of 62), having the transmitted [appropriate] addition level, to an image (Fig. 3, output of 36) (col. 10 lines 5-6). The quantizer (36) outputs quantization values representing an input image to be

superimposed by an adder (64) with watermark information set at an appropriate addition level determined by watermark correction device (62).

Regarding Claim 2: Cox also discloses the data processing system according to claim 1, wherein said maintenance apparatus (Fig. 3, 62) determines the appropriate anti-forgery information addition level based on a test pattern transmitted by said image processing apparatus (DCT calculator, Fig. 3, 56). The DCT calculator (56) is also part of the image processing system. It outputs DCT coefficients used as a test pattern for determining $Vr[k]$ in step 502 (Fig. 5) of the watermark correction device (62).

Regarding Claim 3: Cox discloses a data processing system including an image processing apparatus for processing an image and a maintenance apparatus for setting a processing function of said image processing apparatus, said maintenance apparatus connected with said image processing apparatus through a network, wherein said image processing apparatus comprises:

- Image forming means (Fig. 3, 52) for forming an image to which anti-forgery information (Fig. 3, watermark) is added at a predetermined addition level. It is well known in the art that watermarks are used as anti-forgery information or copy control and management as referred to by Cox (col. 1 lines 30-35). Cox also explains that a user may wish to select a predetermined addition level for the first addition of a watermark into an image sequence (col. 9 lines 7-10).

Art Unit: 2623

- Reading means (Fig. 3, 54) for reading the image formed by said image forming means (image sequence) (col. 9 lines 54-56).
- Transmission means (Fig. 3, 36) for transmitting image data (Fig. 3, output of 36), read by said reading means (54), to said maintenance apparatus (Fig. 3, 58) through the network (Fig. 3, all arrows) (col. 9 lines 63-65). The inverse quantizer (58) is considered part of the maintenance apparatus and receives image data, specifically quantization values from the quantizer (36) belonging to the image processing apparatus.

said maintenance apparatus comprises:

- Reception means (Fig. 3, 58) for receiving the image data (Fig. 3, output of 36) transmitted by said transmission means (36) of said image processing apparatus (col. 9 lines 63-65). The inverse quantizer (58) receives the image data before it begins its processing.
- Setting means (62) determining an addition level appropriate for said image processing apparatus based on the image data received (Fig. 3, output of 36) by said reception means (58), and setting the determined addition level to said image processing apparatus [setting the image processing apparatus to use the determined addition level](Fig. 3, 64). The watermark correction device (62) sets an appropriate addition level in step 504 (Fig. 5) based on the absolute value Dif and the sign s , which are based on the image data received (col. 10 lines 45-49). The flow chart for the setting means is shown in Figure 5. The output of the

watermark correction device (62) are watermark signals with the appropriate addition level applied.

- Wherein said image forming means (64) adds anti-forgery information, having the addition level set by said setting means (62), to the image (output of 36). The adder (64) has the same functionality as the adder (52) and both are considered part of the image processing apparatus.

Regarding Claims 8 and 25: Cox discloses the data processing system according to claim 3, said setting means of said maintenance apparatus further comprising:

- Determination means (Fig. 3, 62) for determining an addition level appropriate for said image processing apparatus based on the image data received by said reception means (Fig. 3, 58). The watermark correction device (62) sets an appropriate addition level in step 504 (Fig. 5) based on the absolute value Dif and the sign s , which are based on the image data received (col. 10 lines 45-49). The flow chart for the setting means is shown in Figure 5. The output of the watermark correction device (62) are watermark signals with the appropriate addition level applied.
- Transmission means (Fig. 3, 62) for transmitting the addition level, determined by said determination means (62), to said image processing apparatus (Fig. 3, 64) (col. 10 lines 3-6).

Art Unit: 2623

Regarding Claims 9 and 26: Cox discloses the data processing system according to claim 8, wherein said determination means (Fig. 3, 62) obtains as the addition level appropriate for said image processing apparatus, a level at which anti-forgery information is readable based on the image data received by said reception means (Fig. 3, 58) (col. 12 lines 17-18). The term readable is satisfied by any manner in which the meaning of the anti-forgery information is grasped. Therefore, it is sufficient to show that the watermark can be detected. Figure 8 shows the detection method for reading a watermark from an image. Since the watermark is readable from the image then it must be inserted at an appropriate addition level that allows it to be read.

Regarding Claims 10 and 27: Cox discloses the data processing system according to claim 9, wherein said determination means (Fig. 3, 62) of said maintenance apparatus comprises storage means (Fig. 3, 32) for storing reference data used for determining the addition level, and determines the addition level based on the reference data and the image data received by said reception means (Fig. 3, 58). The frame memory (32) stores predicted images. The predicted images act as reference data and are used by a DCT calculator (Fig. 3, 56) to calculate DCT coefficients. These coefficients are added to the output of the inverse quantizer (58), which is based on image data (col. 9 lines 65-67). This summation is used for determining the watermark correction signals having the appropriate addition level by watermark correction device (62).

Regarding Claims 11 and 28: Cox discloses the data processing system according to claim 10, wherein said determination means (Fig. 3, 62) performs calculation on the image data received by said reception means (Fig. 3, 58) and the reference data (predicted images) to determine an addition level which satisfies a predetermined condition (col. 11 lines 15-17). The explanation regarding claim 10 outlines how the determination means (62) uses image data and reference data to determine an addition level. Cox discloses these limitations, as well as, the checking of the addition level with a predetermined condition. This check is done in step 526 (Figs. 6 and 7) where Dif is compared with the predetermined zero and j is compared with the predetermined n_k.

Regarding Claim 13: Cox discloses a data processing system including an image processing apparatus for processing an image and a maintenance apparatus for setting a processing function of said image processing apparatus, said maintenance apparatus connected with said image processing apparatus through a network, wherein said image processing apparatus comprises:

- Image forming means (Fig. 3, 52) for forming an image, inclusive of anti-forgery information in a plurality of addition levels (col. 6 lines 38-41 and 62-63). Cox defines the term "slack" which acts as a maximum addition level. Cox also explains that this value may be different for different 8x8 DCT's within a single image and therefore Cox is disclosing the use of multiple addition levels.
- Reading means (Fig. 3, 54) for reading the image formed by said image forming means (image sequence) (col. 9 lines 54-56).

- Transmission means (Fig. 3, 36) for transmitting the image (Fig. 3, output of 36), read by said reading means (54), to said maintenance apparatus (Fig. 3, 58) through the network (Fig. 3, all arrows) (col. 9 lines 63-65). The inverse quantizer (58) is considered part of the maintenance apparatus and receives image data, specifically quantization values from the quantizer (36) belonging to the image processing apparatus.

said maintenance apparatus comprises:

- Reception means (Fig. 3, 58) for receiving the image data (Fig. 3, output of 36) transmitted by said transmission means (36) of said image processing apparatus (col. 9 lines 63-65). The inverse quantizer (58) receives the image data before it begins its processing.
- Setting means (62) for selecting an addition level appropriate for said image processing apparatus based on the image data received (Fig. 3, output of 36) by said reception means (58), and setting the selected addition level to said image processing apparatus [setting the image processing apparatus to use the selected addition level] (Fig. 3, 64). The watermark correction device (62) sets an appropriate addition level in step 504 (Fig. 5) based on the absolute value Dif and the sign s , which are based on the image data received (col. 10 lines 45-49). The flow chart for the setting means is shown in Figure 5. The output of the watermark correction device (62) are watermark signals with the appropriate addition level applied.

- Wherein said image forming means (64) adds anti-forgery information, having the addition level set by said setting means (62), to an image (output of 36). The adder (64) has the same functionality as the adder (52) and both are considered part of the image processing apparatus.

Regarding Claim 14: Cox discloses the data processing system according to claim 13, comprising, in place of said image forming means, image forming means for forming an image inclusive of plural types of anti-forgery information (col. 1 lines 30-35). The plural types of anti-forgery information may all be copyright ownership, which encompasses the title, copyright date, and author. In addition to copyright ownership, Cox discloses that the anti-forgery information may just be coded signal, which may just be a message indicating the data should not be copied.

Regarding Claim 15: Cox discloses the data processing system according to claim 13, comprising, in place of said image forming means, image forming means for forming an image inclusive of $n \times m$ (n and m are natural numbers) anti-forgery information, consisting of n number of anti-forgery information in m number of addition levels. Refer to the analogous arguments made in claims 13 and 14. The plural types of copyright ownership described regarding claim 14, may be located in different DCT blocks. It is also possible that these DCT blocks have different slacks as explained in the analogous argument regarding claim 13. Therefore, plural anti-forgery information may exist at plural addition levels within the same image.

Regarding Claims 16 and 32: Cox discloses an image processing apparatus maintained by an externally connected maintenance apparatus, comprising:

- Report means (Fig. 3, 60) for reporting information related to deterioration of said image processing apparatus (col. 9 line 67-col. 10 line 3). The adder (60) reports information that is deteriorated by the image processing apparatus. The information is reported to the watermark correction device (62).
- Addition means (Fig. 3, 64) for adding anti-forgery information (Fig. 3, output of 62), having an addition level which is determined based on instruction data transmitted by said maintenance apparatus (62) in response to the report, to an image (col. 10 lines 5-6). The adder (64) adds the anti-forgery information with a determined addition level (output of 62) to the image (output of 36).

Regarding Claims 17 and 33: Cox discloses the image processing apparatus according to claim 16, wherein said report means (Fig. 3, 60) transmits, as the information related to deterioration, a test pattern inclusive of anti-forgery information to said maintenance apparatus (Fig. 3, 62) (col. 9 line 67-col. 10 line 3). The adder (60) outputs DCT coefficients for decoded images which means the DCT coefficients represent deteriorated anti-forgery information. These DCT coefficients also satisfy the condition of a test pattern.

Regarding Claim 18: Cox discloses an image processing apparatus connected to an external maintenance apparatus, comprising:

- The addition means is rejected for reasons given in the analogous argument made regarding the image forming means of claim 3.
- It is inherent that the image processing apparatus have an output means.
- The reading means is rejected for reasons given in the analogous argument made regarding the reading means of claim 3.
- The transfer means is rejected for reasons given in the analogous argument made regarding the transfer means of claim 3.
- The reception means is rejected for reasons given in the analogous argument made regarding the reception means and setting means of claim 3.
- The addition means is rejected for reasons given in the analogous argument made regarding the image forming means of claim 3.

Regarding Claim 24: Cox discloses a maintenance apparatus for maintaining an image processing apparatus which forms an image inclusive of anti-forgery information, comprising:

- The determination means and setting means are rejected for reasons given in the analogous argument made regarding the maintenance apparatus of claim 3 comprising a reception means and setting means.

Art Unit: 2623

Regarding Claim 29: Cox discloses an image processing apparatus setting method of setting an anti-forgery information level for an image processing apparatus forming an image inclusive of anti-forgery information, comprising the steps of:

- Checking deterioration of the image processing apparatus (col. 10 lines 31-34 and 45-47). The Dif value is a value corresponding to the deterioration as a result of image processing apparatus. Step 504 in the flow chart in Figure 5 represents this step.
- Determining an anti-forgery information addition level appropriate for the image processing apparatus based on a checking result obtained at said checking step (col. 10 lines 48-49). The watermark having anti-forgery information with an appropriate addition level is determined in step 506 of Figure 5. This determination is based on the checking result from step 504 as demonstrated by the arrow directly connecting step 504 to step 506.
- Setting the addition level, determined at said determination step to the image processing apparatus [setting the image processing apparatus to use the addition level determined at said determination step] (col. 10 lines 55-58). The watermark correction signals which represent the anti-forgery information having the appropriate addition level are sent to the adder (64) belonging to the image processing apparatus.

Regarding Claim 30: Cox discloses the image processing apparatus setting method according to claim 29, further comprising the step of:

- Receiving a test pattern transmitted by the image processing apparatus (col. 10 lines 19-21). The $Dr_k[I]$ is a test pattern input into the watermark correction device (62) from the adder (60)
- Wherein at said checking step, a deterioration level of the image processing apparatus is checked based on the test pattern (col. 10 lines 19-21). The output of adder (60), which is the test pattern, is used in the checking step to compute $Vr[1...N]$ which is in turn used to calculate the Dif value. Therefore, it can be said that the checking step checks the deterioration level based on a test pattern.

Regarding Claim 35: Refer to the analogous arguments made regarding claim 29 for the checking and determining steps. With respect to the checking step, Cox also discloses the image processing apparatus forming an image inclusive of anti-forgery information as argued in regards to claim 1. Refer to the analogous argument made regarding claim 8 for the transmitting step.

Regarding Claim 36: Refer to the analogous arguments made regarding claim 10 corresponding to the steps of receiving and determining. Claim 10 also includes the limitations of claim 3. Refer to the analogous arguments made regarding claim 3 corresponding to the step of setting the second addition level.

Regarding Claim 37: Refer to the analogous arguments made regarding claim 16 explaining the steps of reporting, receiving, and adding.

Regarding Claim 50: Cox discloses an image processing apparatus for adding visually inconspicuous information to an image, comprising:

- Reception means for receiving information from a maintenance apparatus in order to further add, in addition to the information, visually inconspicuous information (col. 10 lines 5-6). The adder (64) is a reception means since it receives the outputs of the maintenance apparatus called the watermark correction device (62).
- Processing means for adding information to be added to the image using the received information (col. 10 lines 5-6). The adder (64) is also the processing means for adding the watermark corrected signals in a manner so that they are visually inconspicuous (col. 6 lines 9-13). The adder (64) changes the values of the quantized DCT coefficients received by quantizer (36) in accordance with the received watermark corrected signals.

Regarding Claim 51: It is inherent that the apparatus in claim 50, built from electronic components having the described functionality, is controlled by a program.

Regarding Claim 54: Cox discloses the image processing apparatus according to claim 50, wherein the information to be added includes date information, information regarding an apparatus used to pick up or input the image, copyright information of the image, or setting information of an apparatus used to pick up/input/form the image (col.

5 lines 29-31). The image processing apparatus adds watermarks, which are defined as any identifying information. Date information, information regarding an apparatus used to pick up or input the image, copyright information of the image, and setting information of an apparatus used to pick up/input/form the image are all types of identifying information.

Regarding Claims 55 and 62: The arguments made with regards to claim 1 are applicable to the limitations of this claim as well. The newly designating information may be the anti-forgery information having a corrected addition level (Fig. 3, output of 62). Also the arguments made with regards to 39 address the visual inconspicuous limitation.

Regarding Claim 56: It is inherent that the apparatus in claim 55, built from electronic components having the described functionality, is controlled by a program.

Regarding Claim 59: Refer to analogous arguments made regarding claim 54. These arguments can be made for the limitations of the maintenance apparatus disclosed in claim 55.

Regarding Claim 61: Refer to analogous arguments made regarding claim 1. Also the arguments made regarding claim 39 address the visual inconspicuous limitation. The

Art Unit: 2623

image processing apparatus receives and adds image information and visually inconspicuous anti-forgery information.

Regarding Claims 63: Refer to analogous arguments made regarding claim 1. The processing ability of the image processing apparatus is gauged by the received addition level. This addition level is used to compute the Dif value, which quantifies the deterioration of the image processing apparatus represented by adder (52) and the quantizing process (col. 10 lines 45-47).

Regarding Claims 64: Refer to the analogous arguments made regarding claim 2.

Regarding Claim 65: Refer to the analogous arguments made regarding claim 63. The processing ability is understood to be the degree of degradation.

Regarding Claim 66: Refer to the analogous arguments made regarding claim 64. The processing ability is understood to be the degree of degradation.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 4, 5, 6, 19, 20, 21 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cox in view of Ogino et al. (PN 6,359,905). (hereinafter Ogino)

Regarding Claims 4 and 19: Cox discloses the data processing system according to claim 3, but does not disclose an addition level storage means. However, Ogino does disclose an image processing apparatus further comprising:

- Addition level storage means (Fig. 2, 24) for storing the addition level (Fig. 2, FS) (col. 5 lines 63-67), wherein said image forming means (Fig. 2, 20) adds anti-forgery information to the image (Fig. 2, Vi) at the addition level (FS), stored in said addition level storage means (24), and forms an image (contents of record medium, Fig. 2, 27). The additional information generating unit (24) has a means for storing the additional information signal FS, which is disclosed as being copying preventive control information and/or a copying preventive signal such as copyright information (col. 6 lines 1-6). The copying preventive control information reads on the addition level, since the addition level controls a characteristic of the additional information. The image forming means combines the anti-forgery information at the addition level (FS) to the input image (Vi) at the superimposing unit (Fig. 2, 22), which then outputs the resulting image to be stored in the record medium (27). It would have been obvious for one of ordinary skill in the art to modify Cox with the addition level storage means of Ogino because both references disclose an image processing apparatus adding a watermark. Furthermore, Cox explains that the addition level maximum would be

set through a user interface and an algorithm would be used to automatically set the watermark to an allowable strength (col. 9 lines 7-19). It is obvious that a storage means can be used in conjunction with this algorithm to store the allowable addition levels. One would be motivated to make this modification because Ogino offers the advantage of choosing from multiple addition levels, which could avoid having to rely on a manual decision as Cox suggests.

Regarding Claims 5 and 20: Cox in view of Ogino discloses the data processing system according to claim 4. Cox incorporating Cox (PN 5,915,027) discloses the image processing apparatus further comprising:

- Test pattern storage means (PN mapper, Fig. 1, 11) for storing a test pattern (PN sequence), wherein said image forming means adds anti-forgery information to the test pattern (PN sequence), stored in said test pattern storage means (11), and forms an image (col. 6 lines 29-31). The PN mapper (11) contains a database for storing the PN sequence information. The PN sequence is used as a test pattern for embedding watermark data (col. 4 lines 45-48).

Regarding Claims 6 and 21: Cox incorporating Cox (PN 5,915,027) in view of Ogino discloses the data processing system according to claim 5. Ogino further discloses an image processing apparatus further comprising:

- Anti-forgery information storage means (Fig. 2, 24) for storing anti-forgery information (Fig. 2, FS), wherein said image forming means (Fig. 2, 20) adds

anti-forgery information (FS), stored in said anti-forgery information storage means (24), to the test pattern (Fig. 4, PS) and forms an image (contents of record medium, Fig. 2, 27). The additional information generating unit (24) has a means for storing the additional information signal FS, which is disclosed as being copying preventive control information and/or a copying preventive signal such as copyright information (col. 6 lines 1-6). The copying preventive signal reads on the anti-forgery information. The image forming means (20) contains a multiplying unit (Fig. 4, 252) for adding the anti-forgery information (FS) to the test pattern (PS) (col. 7 lines 4-6). The image forming means (20) also forms an image (contents of record medium, 27) by combining the anti-forgery information added to the test pattern (SF) with an input image (Vi) at the superimposing unit (Fig. 2, 22). It would have been obvious to one of ordinary skill in the art to modify Cox with the anti-forgery information storage means because both references teach watermark embedding using test patterns. One would be motivated to make this modification to allow the anti-forgery information to be embedded automatically as opposed to being entered each time the information is embedded. It is common practice to repeatedly embed the same information in multiple frames or areas of an image.

Regarding Claim 31: All of the limitations of claim 31 are explained in analogous arguments made in claim 5, which includes the arguments made in claim 3. Note that

Art Unit: 2623

the first addition level stated in claim 31 corresponds to the predetermined addition level of claim 3.

11. Claims 38, 39, 40, 42, 48, 52, 53, 57, 58, and 60 are rejected under 35 U.S.C.

103(a) as being unpatentable over Cox.

Regarding Claims 38 and 48: Cox discloses an image processing apparatus comprising:

- Reception means (Fig. 3, 64) for receiving from a maintenance apparatus (Fig. 3, 62) notification which recommends correction of an addition level of information added to an image (col. lines 55-58). The reception means is the adder (64) which is given notification to add information with corrected addition level to an image once the watermark process (Fig. 5) is finished.
- Official notice is taken that it is of ordinary skill to include an output means for displaying the received notification. It is obvious to one of ordinary skill in the art to display the notification because it is common for users to monitor the activity of automated processes. Furthermore, one would be motivated to make this modification to enable the user to visual confirm that the data is watermarked properly.

Regarding Claim 39: Cox discloses the image processing apparatus according to claim 38, wherein the information added to the image is added by a visually inconspicuous

Art Unit: 2623

method (col. 6 lines 38-41). The "slack" is calculated so that the information added is imperceptible throughout the image.

Regarding Claim 40: Cox discloses the image processing apparatus according to claim 38, wherein the addition level varies in correspondence with deterioration of the image processing apparatus (col. 10 lines 48-49). The watermark correction signals which have the corrected addition levels vary because they are calculated using Dif, which is a value representing the deterioration of the image processing apparatus.

Regarding Claim 42: Cox discloses the image processing apparatus according to claim 38, further comprising:

- Image forming means for forming on a print medium information to be added to the image. Refer to the analogous arguments made regarding claim 1, corresponding to the forming of information on a print medium.
- Read means for reading the formed addition information. Refer to the analogous arguments made regarding claim 3, corresponding to the reading means.
- Transmission means for transmitting the read addition information to the maintenance apparatus. Refer to the analogous arguments made regarding claim 3, corresponding to the transmission means.
- Setting means for setting an addition level of the addition information to a most appropriate value in accordance with the information received from the

maintenance apparatus. Refer to the analogous arguments made regarding claim 3, corresponding to the setting means.

Regarding Claim 52: Cox discloses the image processing apparatus according to claim 50, further comprising inquiry means for inquiring whether or not the maintenance apparatus has additional information to be added to the image. It is obvious that the image processing apparatus could inquire the maintenance apparatus as part of the process of receiving notification that the corrected information is available as explained with regards to claim 38. It would be obvious to one of ordinary skill in the art that this inquiry procedure be added to synchronize the process of combining the image data with the anti-forgery information having a corrected addition level. One would be motivated to make this modification to prevent adding the corrected anti-forgery information to the wrong image data. This is particularly of importance when the image data is rapidly input as in a video.

Regarding Claims 53: Cox discloses the image processing apparatus according to claim 52, wherein the inquiry is made at the time of turning on the power of the image processing apparatus. It is inherent that these electrical components be supplied with a power source and that they are immediately operable once power is available. Therefore, the inquiry, which is an obvious expansion of the operation of the image processing apparatus' adder (64), would occur at the time the adder (64) received power.

Regarding Claim 57: Cox discloses the apparatus according to claim 55, wherein said transmission means transmits the information to be added in response to an inquiry from the image processing apparatus. It is obvious that the image processing apparatus could inquire the maintenance apparatus as part of the process of receiving notification that the corrected information is available as explained with regards to claim 38. In addition it would be obvious that for the maintenance apparatus to transmit information in response to the inquiry. Furthermore, it would be obvious to one of ordinary skill in the art that this inquiry and accompanying response procedure be added to synchronize the process of combining the image data with the anti-forgery information having a corrected addition level. One would be motivated to make this modification to prevent adding the corrected anti-forgery information to the wrong image data. This is particularly of importance when the image data is rapidly input as in a video.

Regarding Claim 58: Refer to analogous arguments made regarding claim 53. These arguments can be made for the limitations of the maintenance apparatus disclosed in claim 57.

Regarding Claim 60: Official notice is taken that it is obvious for the transmission means of the apparatus of claim 55 to transmit the information to a plurality of image processing apparatuses including said image processing apparatus. It would be

obvious to one of ordinary skill in the art to create multiple outputs to a plurality of image processing apparatuses because copies are often made multiple times. Furthermore, one would be motivated to make this modification to save time making copies simultaneously rather than in sequence.

12. Claims 43-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirai (US 2001/0019659 A1).

Regarding Claim 43: Cox discloses a maintenance apparatus comprising:

- Reception means for receiving addition level information of information to be added to an image by an image forming apparatus. Refer to the analogous arguments made regarding claim 3, corresponding to the reception means and image forming means.
- Transmission means for transmitting the notification to the image processing apparatus. Refer to analogous arguments made regarding claim 8, corresponding to the transmission means.

Cox does not disclose:

- Receiving date information
- Determining a date based on the received information for notifying the image forming apparatus to make corrections and transmitting the notification on the determined date

However, Hirai discloses:

- Receiving date information (p. 5, [0072], line 11). The disclosed method must have a means to receive this predetermined time. The predetermined time is date information.
- Determining a date for notifying the image forming apparatus to make corrections and transmitting the notification on the determined date (p. 5, [0072], lines 10-14). The disclosed method uses the received predetermined time/date to determine whether the time/date is elapsed. The result of this determination (elapsed or not elapsed) determines whether the notification is to be sent. If the time/date is reached then the notification is sent (recording is allowed).

It would be obvious to one of ordinary skill in the art to modify Cox with Hirai because it is well known that watermarks deteriorate over time and both references disclose the use of watermarks to prevent copying. One would be motivated to make this modification to strengthen a deteriorated watermark after a certain period of time to ensure that the copyright information remains protected.

Regarding Claim 44: Refer to the analogous arguments made regarding claim 39.

Regarding Claim 45: Refer to the analogous arguments made regarding claim 40.

13. Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cox in view of Hirai as applied to claim 43 above, and further in view of Sasich et al. (PN 6,661,904). (hereinafter Sasich)

Art Unit: 2623

Regarding Claim 47: Cox as modified by Hirai discloses the maintenance apparatus according to claim 43, but does not disclose storing an addition level, date, or machine number. However, Sasich discloses the storage of an addition level (logo level sent) and date information (time and/or date) to be added to an image in association with a machine number (transaction server address) (col. 12 lines 39-46). It would be obvious to one of ordinary skill in the art to add the functions integration object (Fig. 6, 134) to Cox's circuitry when multiple image forming apparatuses are used. One would be motivated to make this modification because each image forming apparatus yield different levels of deterioration.

Allowable Subject Matter

14. Claims 7, 12, 22, 23, 34, 41, and 46 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Koltai et al. (PN 6,104,812) is cited for teaching the maintenance of the colors belonging to a hidden indicia.
- Utagawa et al. (PN 5,650,863) is cited for teaching a countermeasure for preventing forgery with an image processing apparatus.

Art Unit: 2623

- Nakamura et al. (PN 6,185,312) is cited for teaching an image processing apparatus with watermark reading and embedding.
- Hasuo et al. (PN 5,321,470) is cited for teaching copying prevention and the changing of parameters when an attempt to copy currency and the like is made.
- Rhoads (6,285,776) is cited for teaching a re-watermarking operation including using multiple levels of robustness.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig W Kronenthal whose telephone number is (703) 305-8696. The examiner can normally be reached on 8:00 am - 5:00 pm / Mon. - Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703) 306-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

12/03/04
CWK

MEHRDAD DASTOURI
PRIMARY EXAMINER

Mehrdad Dastouri